or 13 mm 45 of water. This pressure of 13 mm 45 is absolutely necessary, as well as a slight additional pressure to overcome the friction in the mains and impress upon the gas the necessary velocity of flow. In the case of a blast furnace producing char-coal iron, the pressure at the head of the furnace was 35 mm of water, the gas mains being too small and poorly designed. This bad construction of the gas mains could not be corrected without a general reconstruction. The method of arriving at the resistance caused by friction in the gas mains will be given later,

(c) Hydrostatic Pressure in Open-top Chambers Filled with a Light Gas.—If an inverted test-tube is held vertically (Fig. 1.9)

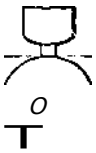

FIG. 19.

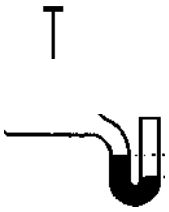

FIG. 20.

and filled with hydrogen the pressure at the level *00* will be equal to that of the atmosphere, and at the upper part there will be a positive pressure + <5. This experiment may bo modified by using a vessel filled with hydrogen (Fig. 20) which has a capillary strangulation at the top surmounted by a thistle, and a U tube at the bottom. The capillary tube is sealed with a drop of water, permitting the hydrogen to escape, when its pressure exceeds that of the atmosphere, without, at the same time, giving free

communication between the interior of the vessel and the air. It necessarily follows that the pressure in the interior of the vessel at the level *00* is equal to that of the atmosphere. What will be the pressure indicated by the manometer U tube filled with water at *K* connected with the lower part of the vessel? Upon